



2010 JOINT RAIL CONFERENCE
*HIGH-SPEED AND
INTERCITY PASSENGER RAIL*



AMTRAK
FINAL PROGRAM

**APRIL 27-29, 2010
URBANA, IL**



ILLINOIS
RAILROAD ENGINEERING PROGRAM

Sponsors



The Voice of the Railroad Construction Industry



esi-website.com

Chair's Welcome Message

Welcome to the 2010 Joint Rail Conference (JRC) hosted by the Railroad Engineering Program at the University of Illinois at Urbana-Champaign. The 2010 Joint Rail Conference is a cooperative effort of the rail groups of the American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), Institute of Electrical and Electronics Engineers (IEEE), American Railway Engineering and Maintenance of Way Association (AREMA) and the Transportation Research Board (TRB) of the National Academies, representing the leading rail transportation engineering educational and academic research organizations in North America. The expertise and perspective offered by these organizations has led to a conference that has both breadth and depth in a wide range of current rail transportation and engineering topics.

In light of the new North American focus on developing High-speed and Intercity Passenger Rail, the organizers selected this as the 2010 conference theme. A worldwide call for papers and presentations on both passenger and freight rail subjects was issued, requesting abstracts on all aspects of rail transport. The response was overwhelming; over 270 abstracts were received from six continents and 23 different countries on a wide variety of rail engineering, transportation, management, planning, safety and operations topics.

The conference program will include approximately 200 spoken presentations, a special poster presentation session, invited speakers and plenary sessions. Session topics will cover a wide range of passenger and freight railroad civil, mechanical, electrical and systems engineering topics, as well as rail safety, planning, design, financing, operations and management. The program is organized into 6 tracks as follows:

1 – Railroad Infrastructure Engineering
2 – Rail Equipment Engineering
3 – High-Speed Rail Experience & Development

4 – Shared Corridors
5 – Planning, Management & Operation
6 – Safety, Security & Environment

We want to extend a particularly warm welcome to our many international participants and guests. With the proliferation of high-speed rail systems elsewhere in the world, North Americans recognize that we have a great deal to learn from the experience and expertise of the international rail community. We sincerely appreciate that so many of you chose to attend JRC 2010 and share your knowledge. We also hope that representatives from nations developing or expanding their heavy haul freight rail capability and capacity will find the knowledge they gain from North Americans, and other heavy haul railroad participants at JRC 2010, beneficial to the success of freight railroad safety, efficiency and reliability in your nation or region.

Christopher Barkan - Conference Chair
ASCE T&DI Rail Transportation Committee
University of Illinois at Urbana-Champaign

Richard Bruss – Conference Co-Chair
IEEE Vehicular Technology Society
Amtrak

Robert Dorer – Conference Co-Chair
TRB Rail Executive Board
Volpe Center

Gerald Anderson - Conference Co-Chair
ASME Rail Transportation Division
Transportation Technology Center, Inc.

Dale Muellerleile – Conference Co-Chair
AREMA Committee 17, High-Speed Rail
HDR Inc.

Conference Organizers

CONFERENCE CO-CHAIRS:

Chris Barkan (ASCE) - University of Illinois
Richard Bruss (IEEE) - Amtrak
Gerald Anderson (ASME) - TTCI
Dale Muellerleile (AREMA) - HDR
Robert Dorer (TRB) - Volpe

TRACK TEAMS (LEADER IN BOLD):

Track 1 - Riley Edwards - University of Illinois

Conrad Ruppert - Amtrak
David Davis - AAR/TTCI
Tyler Dick - HDR Engineering Inc.
Kevin Day - CN
Don Uzarski - University of Illinois
Henry Lees - BNSF Railway
Robert Sweeney - Modjeski and Masters, Inc.
Steven Chrismer - Amtrak
James Hyslip - HyGround Engineering
Jerry Rose - University of Kentucky
Travis Painter - Hanson Professional Services
Paul DelSignore - Amtrak

Track 2 - Michelle Muhlanger - Volpe Center

Gerald Anderson - TTCI
Matthew Dick - Rail Sciences
David Tyrell - Volpe Center

Track 3 - Chris Barkan - University of Illinois

Michael Garcia - Illinois DOT
Tsung Chung Kao - National Taiwan University
George Martin - Illinois DOT and AECOM (retired)
Mark Walbrun - CH2M HILL

Track 4 - Lamont Ward - Amtrak

Michael Franke - Amtrak
John Gray - AAR
DJ Mitchell - BNSF Railway

Track 5 - Avery Grimes

David Clarke - University of Tennessee
Yung-Cheng Lai - National Taiwan University
Andrew Nash - Vienna Transport Strategies
Moshe Givoni - University of Oxford
Anthony Perl - Simon Fraser University
Dan Brand - Charles River Associates
Eric Tyrer - York College CUNY

Track 6 - Robert Dorer - Volpe Center

Larry Kelterborn - Interfleet NA
Melissa Shurland - FRA
Patrick Simmons - North Carolina Rail Office
David Thurston - Parsons
John Tunna - TTCI / AAR
Sesto Vespa - Transport Canada

PROGRAM PLANNING COMMITTEE:

Gerald Anderson - TTCI
Chris Barkan - University of Illinois
Richard Bruss - Amtrak
Steve Chrismer - Amtrak
Matthew Dick - Rail Sciences
Robert Dorer - Volpe Center
Riley Edwards - University of Illinois
Robert Gray - Penn State University
Avery Grimes - Steel River
Kim Hagemann - University of Illinois
Cameron Lonsdale - Amsted
Dale Muellerleile - HDR
Michelle Muhlanger - Volpe Center
Jason Reiling - Strato, Inc.
Conrad Ruppert - Amtrak
David Tyrell - Volpe Center
Lamont Ward - Amtrak
Samuel Williams - ASME

PUBLICITY COMMITTEE:

Tom Berg - Global Rail Connection
Pasi Lautala - Michigan Tech
Martyn Chymera - IEEE
Steve Dedmon - Standard Steel

CONFERENCE TREASURER REGISTRAR:

Jason Reiling - Strato, Inc.
Deborah Edelman - Strato, Inc.

Final Program

MEETING LOCATION:

Concurrent sessions will be held in the Illini Union - 1401 W. Green St., Urbana, IL 61801.

REGISTRATION DESK:

Registration will be held in the Illini Union hallway outside Illini Rooms ABC, starting Tuesday, April 27th at 7:00am and will remain open all day Wednesday, April 28th and Thursday, April 29th from 7:00am until 12:50pm. All persons attending the conference will be required to register, and pay the appropriate fee for registration. Please wear your badges to all sessions and activities.

REGISTRATION HOURS

Registration desk will be open at the Foyer area outside Illini Room A

Tuesday, April 27	7:00am - 5:00pm
Wednesday, April 28	7:00am - 5:00pm
Thursday, April 29	7:00am - 12:00pm

REGISTRATION FEES

Members/Authors/Session Chair Full Conference**	\$350.00
Members/Authors/Session Chair Single Day*	\$250.00
Non Members Full Conference**	\$480.00
Non Members Single Day*	\$300.00
Students/Retirees Full Conference*	\$100.00
Students/Retirees Single Day*	\$75.00
Additional Late Registration Fee (after April 5, 2010)	\$100.00

(Additional Dinner Tickets & Proceedings are available at the Registration Desk)

*Conference fees include Proceedings but does not include Banquet

** Conference fees include Proceedings & Banquet

CONFERENCE RECEPTION AND BANQUET:

All conference attendees and guests are encouraged to take the opportunity to meet and discuss ideas with industry peers at the Reception. The Conference Reception will be held on Wednesday, April 28th from 5:00 to 6:30 PM in the Illini Union South Lounge. The Conference Banquet Program will be held immediately following the reception from 6:30pm to 9:00 PM in Illini Union Ballroom. Conference Banquet tickets are provided to Full Conference Registrants with your name badge. Additional tickets for the Banquet may be purchased for \$50 at the registration desk.

AIRPORT TRANSPORTATION:

The Champaign-Urbana (Willard) airport is located on Rt. 45 (Neil St. in Champaign) approximately 6 miles south of downtown. Allow 25 minutes to drive there from campus. Taxi's can be used for about \$12: Yellow Cab 217-355-3553, Illini Taxi 217-359-8634.

SCHEDULE:

The conference program begins with the first plenary session in the Illini Union, Illini Room A at 8:00am Tuesday morning. Subsequent sessions will be held in Illini Union, Illini Rooms A, B, C, & South Lounge, 210, 404, 405, 406, 407. There will be a continental breakfast each morning beginning at 7:00am in Illini Union Room C. Lunch will be provided to all conference registrants on Tuesday and Wednesday. Thursday lunch is on your own.

ATTIRE: The recommended attire for the conference is "business casual"

PUBLICATION SALES:

All ASME/IEEE/ASCE/AREMA/TRB Joint Rail Conference technical papers are compiled into a Proceedings Volume CD. One copy is provided to all attendees. Additional copies of the ASME/IEEE/ASCE/AREMA/TRB Joint Rail Conference Technical Proceedings can be purchased at the registration desk for \$50 each. Additional copies can also be ordered from:

ASME Order Department
22 Law Drive
Box 2300 Fairfield, NJ 07007-2300

MONDAY, APRIL 26TH, 2010

Exhibitor set-up (Illini Room C) 1:00pm - 5:00pm

TUESDAY, APRIL 27TH, 2010

Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
 Continental Breakfast (Illini Room C) 7:00am - 9:00am
 Registration Open 7:00am - 5:00pm
 Plenary Presentation Session 8:00am - 9:25am
 Concurrent Presentation Sessions 9:40am - 11:45am
 Luncheon (room 314) 11:45am - 1:00pm
 Concurrent Presentation Sessions 1:00pm - 5:05pm
 Reception/Poster Presentations (Ballroom 2nd Floor) 5:05pm - 7:00pm

WEDNESDAY, APRIL 28TH, 2010

Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
 Continental Breakfast (Illini Room C) 7:00am - 9:00am
 Registration Open 7:00am - 5:00pm
 Plenary Presentation Session 8:00am - 10:15am
 Concurrent Presentation Sessions 10:35am - 11:50am
 Luncheon (room 314) 11:50pm - 1:05pm
 Concurrent Presentation Sessions 1:05pm - 5:15pm
 Reception (South Lounge) 5:15pm - 6:30pm

BANQUET*- Illini Union Ballroom - 2nd Floor 6:30pm - 9:00pm
Conference Keynote Speaker: Tsung-Chung (TC) Kao - University of Illinois / National Taiwan University
"A New Track for US - High Speed Rail"

THURSDAY, APRIL 29TH, 2010

Author Breakfast (Colonial Room 1st Floor) 7:00am - 7:45am
 Continental Breakfast (Exhibit hall) 7:00am - 9:00am
 Concurrent Presentation Sessions 8:00am - 12:05pm
 Technical Tours** 1:30pm - 4:30pm

Meet in 314 Illini Union at 12:15pm for lunch followed by the tour.

Tour A: UIUC Engineering Campus Laboratory Tour

This tour will visit a portion of the engineering laboratories and research facilities on the campus of the University of Illinois at Urbana-Champaign (UIUC). The two primary stops on the tour will be a visit to the Newmark Civil Engineering Laboratory and the Beckman Institute for Advanced Science and Technology. Newmark Laboratory contains ongoing research projects focusing on many facets of civil engineering, including structural, seismic, and geotechnical engineering. The Beckman Institute for Advanced Science and Technology is an interdisciplinary research institute devoted to leading-edge research in the physical sciences, computation, engineering, biology, behavior, cognition, and neuroscience. Selected highlights of the tour will include a visit to the Mid-America Earthquake (MAE) Center, Newmark Structural Engineering Laboratory, Computer Vision and Robotics Laboratory, and current Railroad Engineering Research projects underway in the both Civil and Electrical Engineering. This tour will be a walking tour and will originate within a short distance of the conference meeting rooms (Illini Union).

Tour B: Illinois Terminal Multi-Modal Facility Tour:

A special tour will be given of the Illinois Terminal, Champaign-Urbana's multi-modal transportation center. Illinois Terminal is served by local and intercity busses, as well as intercity passenger rail (Amtrak). Illinois Terminal opened in 1999 and it serves as the transportation hub for the city of Champaign. The tour will be given by Mr. Bill Volk, Managing Director of the Champaign-Urbana Mass Transit District (CUMTD). CUMTD has received many awards for providing excellent transit service to over 10 million passengers per year, and is widely considered to be one of North America's best mid-sized city transit system. Complimentary transportation to and from the Illinois Terminal will be provided by the CUMTD.

Advance tickets required for banquet

Advance tickets required to participate in tour

MONDAY, APRIL 26TH, 2010

RTD Executive Committee Meeting (room 210) 1:00 pm - 2:30 pm
 ASCE T&DI Rail Transportation Committee meeting (room 407) 2:30 pm - 4:15pm
 RTD General Committee Meeting (room 210) 2:45 pm - 4:15 pm
 RTD, ASCE, IEEE Joint Committee Meeting (room 210) 4:30 pm - 5:30 pm

TUESDAY, APRIL 27TH, 2010

TRB AR030 Mid-year Meeting (Lunch Included) 12:00 pm - 2:30 pm
 335 Grainger Engineering Library (inquire at registration desk for directions)

Travel Information: Champaign-Urbana



Champaign-Urbana is about 140 miles from Chicago, 190 miles from St. Louis, and 110 miles from Indianapolis. Served by American Airlines and Delta Airlines, the Champaign (CMI) airport offers seven daily flights in and out. Alternative airports include: Chicago, IL, St. Louis, MO, Bloomington, IL, and Indianapolis, IN. Champaign is also served by three daily Amtrak trains and a shuttle (LEX) to-and-from the Chicago airports. For additional travel information visit:

Willard (Champaign-Urbana) Airport: www.flycmi.com

Champaign-Urbana Mass Transit: www.cumtd.com

Amtrak: www.amtrak.com 1-800-872-7245

LEX: www.lincolnlandexpress.com 1-800-223-9313 (shuttle from Chicago, IL, Bloomington, IL, Indianapolis, IN to Champaign, IL) Advance reservation required

Illini Shuttle: <http://www.illinishuttle.com/> (shuttle to/from Chicago to Champaign) Advance reservation required

Lodging

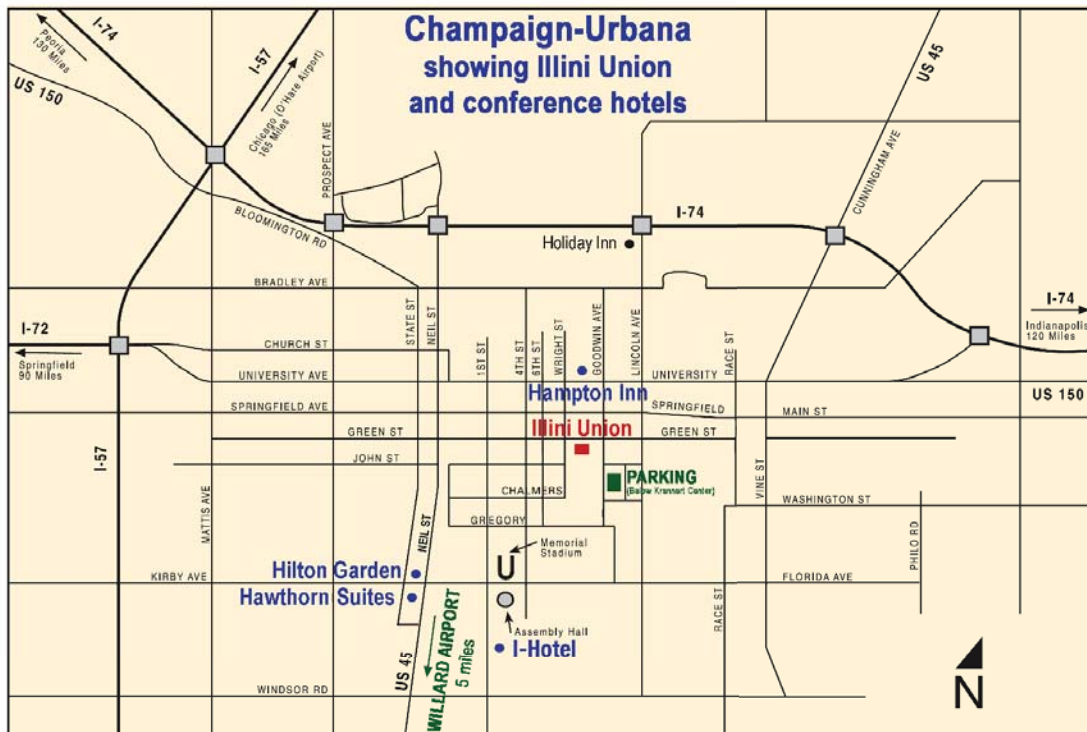
Hampton Inn: 217-337-1100
Walking Distance
1200 W. University, Urbana, IL 61801

iHotel: 217-819-5000
Shuttle bus
1900 S. 1st Street, Champaign, IL 61820

Hawthorn Suites: 217-398-3400
Shuttle bus
101 Trade Centre, Champaign, IL 61820

Illini Union Hotel: 217-333-3030
Conference bus
1401 W. Green St., Urbana, IL 61801

Hilton Garden Inn: 217-352-9970
Shuttle bus
1501 S. Neil St., Champaign, IL 61820



TRACK 1 RAILROAD INFRASTRUCTURE ENGINEERING

- 1-1 Concrete Tie Fasteners - Tuesday, April 27th, 3:25 - 5:05pm
- 1-2 Concrete Tie Design and Performance - Tuesday, April 27th, 9:40 - 11:45am
- 1-3 Composite and Alternative Tie Designs - Tuesday, April 27th, 1:00 - 3:05pm
- 1-4 Ballastless Track Design and Performance - Tuesday, April 27th, 1:00 - 3:05pm
- 1-5 Track Alignment Prediction Modeling - Wednesday, April 28th, 3:25 - 5:10pm
- 1-6 Track Inspection Technologies - Wednesday, April 28th, 1:05 - 3:10pm
- 1-7 Track Maintenance Planning - Wednesday, April 28th, 1:05 - 3:10pm
- 1-8 High-Speed Rail Special Trackwork Design and Performance - Tuesday, April 27th, 3:25 - 5:05pm
- 1-9 High-Speed Rail Structures - Wednesday, April 28th, 10:35 - 11:50am
- 1-10 Rail - Thursday, April 29th 10:25 - 12:05pm
- 1-11 Rail Stress Management - Wednesday, April 28th, 1:05 - 3:10pm
- 1-12 Track Design and Construction - Thursday, April 29th 8:00 - 10:05am
- 1-13 Track Substructure - Thursday, April 29th 8:00 - 10:05am and 10:25 - 12:05pm
- 1-14 Composite Structures and Rehabilitation - Wednesday, April 28th, 10:35 - 11:50am
- 1-15 Electrification - Tuesday, April 27th, 3:25 - 5:05pm

TRACK 2 RAIL EQUIPMENT ENGINEERING

- 2-1 Crashworthiness - Tuesday, April 27th, 9:40 - 11:45am
- 2-2 Bearing Design and Testing - Tuesday, April 27th, 1:00 - 3:05pm
- 2-3 Fluid Dynamics in Rail - Tuesday, April 27th, 3:25 - 5:05pm
- 2-4 Vehicle Track Interaction - Wednesday, April 28th, 1:05 - 3:10pm
- 2-5 Traction - Tuesday, April 27th, 1:00 - 3:05pm
- 2-7 Wheel Design and Analysis - Tuesday, April 27th, 1:00 - 3:05pm
- 2-8 Rolling Stock Design - Thursday, April 29th 10:25 - 12:05pm
- 2-9 Inspection Technology - Wednesday, April 28th, 10:35 - 11:50am
- 2-11 High-Speed Vehicle Track Interaction - Wednesday, April 28th, 3:25 - 5:10pm

TRACK 3 HSR EXPERIENCE & DEVELOPMENT

- 3-3 California High-Speed Rail - Tuesday, April 27th, 1:00 - 3:05pm
- 3-5 FRA Office Research and Development - Tuesday, April 27th, 3:25 - 5:05pm
- 3-6 State Programs - Tuesday, April 27th, 3:25 - 5:05pm
- 3-7 Asian Technology and Systems - Wednesday, April 28th, 3:25 - 5:10pm
- 3-9 Asian High-Speed Experience - Wednesday, April 28th, 1:05 - 3:10pm
- 3-10 European High-Speed Rail Technology - Thursday, April 29th 8:00 - 10:05am

TRACK 4 SHARED CORRIDORS

- 4-1 Shared Corridors - Tuesday, April 27th, 9:40 - 11:45am
- 4-2 Shared Corridors - Tuesday, April 27th, 1:00 - 3:05pm

TRACK 5 PLANNING, MANAGEMENT & OPERATION

- 5-1 Capacity Modeling - Tuesday, April 27th, 9:40 - 11:45am
- 5-2 Network Modeling - Tuesday, April 27th, 1:00 - 3:05pm
- 5-3 Demand Forecasting - Thursday, April 29th 8:00 - 10:05am
- 5-4 PPP & Risk Analysis - Wednesday, April 28th, 3:25 - 5:10pm
- 5-5 Resource Planning - Wednesday, April 28th, 10:35 - 11:50am
- 5-6 Station Design and Passenger Services - Thursday, April 29th 10:25 - 12:05pm
- 5-7 Finance and Economics - Tuesday, April 27th, 3:25 - 5:05pm
- 5-8 Railroad Education - Tuesday, April 27th, 9:40 - 11:45am
- 5-9 Case Studies - Thursday, April 29th 8:00 - 10:05am

TRACK 6 SAFETY, SECURITY & ENVIRONMENT

- 6-1 System Safety Assurance in Rail Operations - Tuesday, April 27th, 9:40 - 11:45am
- 6-2 Risk Assessment of Hazardous Good Transport - Wednesday, April 28th, 3:25 - 5:10pm
- 6-3 Positive Train Control (PTC) - Technology and Regulation - Thursday, April 29th 10:25 - 12:05pm
- 6-4 Human Factors in Rail Engineering and Operations - Wednesday, April 28th, 10:35 - 11:50am
- 6-5 Energy and Environmental Issues in Rail System Design and Operation - Wednesday, April 28th, 1:05 - 3:10pm
- 6-6 Grade Crossing and Right-of-way Safety - Thursday, April 29th, 8:00 - 10:05am

Tuesday, April 27 - Morning Sessions

Time Room	8:00	8:10	8:35	9:00	9:25
PLENARY SESSION - 1 Chair: Chris Barkan - University of Illinois					
ILLINI ROOM A	Opening Remarks	JRC2010-36096 Full Span Precast and Launching Construction in Taiwan's High Speed Rail Project <i>James Chung Tai, Dennis Jang, Heather Gaffney, and John Flint T.Y. Lin International</i>	JRC2010-36014 High Speed Locomotive Development - A European Experience <i>Janis Vitins - Bombardier Transportation</i>	The FRA High-Speed Intercity Passenger Rail Program <i>Mark Yachmetz - Federal Railroad Administration</i>	
210	No Sessions Scheduled in 210				
404	No Sessions Scheduled in 404				
405	No Sessions Scheduled in 405				
406	No Sessions Scheduled in 406				
407	No Sessions Scheduled in 407				

BREAK - EXHIBIT HALL - ILLINI ROOM B

9:40	10:05	10:30	10:55	11:20	
4-1 SHARED CORRIDOR 1 Chair: Dale Muellerleile - HDR					ILLINI ROOM A
JRC2010-36062 Shared Corridor: International Delivery: UK (WCML) and Saudi Railway Program <i>Vinay Mudholkar - Louis Berger Group, INC</i>	JRC2010-36263 Guidebook for Implementing Passenger Service on Shared Passenger and Freight Rail Corridors <i>Alan Bing - ICF International David P Simpson - David P. Simpson Consultants LLC.</i>	JRC2010-36264 Joint Benefits for Use of Freight Railroad Corridors in High Speed Rail Development <i>Mark Walbrun - CH2M HILL David Phillips - TranSystems</i>	JRC2010-36286 Best Practices in Host Railroad Partnerships: Protecting the Public's Investment <i>Jason Maga - Amtrak Operations</i>	JRC2010-36116 Synergism in High-Speed Rail Planning - A Case Study <i>Art Peterson - Parsons Brinckerhoff George Weber - Illinois Department of Transportation Mark Bristol - Union Pacific Railroad</i>	
5-8 RAILROAD EDUCATION PANEL DISCUSSION Chair: Chris Barkan - University of Illinois at Urbana-Champaign					ROOM 210
JRC2010-36293 TBD <i>Chris Barkan - UIUC (ASCE RTC)</i>	JRC2010-36293 TBD <i>Mehdi Ahmadian - VTU (ASME RTD)</i>	JRC2010-36293 TBD <i>Kevin Kesler - Federal Railroad Administration</i>	JRC2010-36025 Developing Railway Higher Education in the European Union and United States <i>Pasi Lautala and William Sproule - Michigan Tech University Rosario Macario - Universida de Técnica de Lisboa Joern Pacht - Technische Universität Braunschweig J. Riley Edwards - UIUC</i>		
JRC2010-36293 TBD <i>Dallas Richards - Arcadis (AREMA C-24)</i>	JRC2010-36293 TBD <i>David Thurston - Parsons (IRSE)</i>				
1-2 CONCRETE TIE DESIGN AND PERFORMANCE Chair: John Zeman - University of Illinois at Urbana-Champaign					ROOM 404
JRC2010-36219 Evaluating the Potential for Damaging Hydraulic Pressure in the Concrete Tie Rail Seat <i>John Zeman, J. Riley Edwards, David A. Lange, and Chris Barkan University of Illinois at Urbana-Champaign</i>	JRC2010-36069 Sleeper Analysis Based on the Methodology Life Cycle Cost "LCC" <i>Rachel Maximo - VALE Paulo Silva - Military Institute of Engineering</i>	JRC2010-36075 The Use of Strain Attenuating Tie Pad and Their Influence on Rail Seat Load in Heavy-Haul Railroads <i>Konstantinos Giannakos - University of Thessaly, Greece</i>	JRC2010-36147 Cyclic Loading Tests of Concrete Sleepers with Varying Ballast Condition <i>Antti Nurmikolu, Olli Kerokoski, and Tommi Rantala - Tampere University of Technology Tuomo Viitala - Finnish Rail Administration</i>		
6-1 SYSTEM SAFETY ASSURANCE IN RAIL OPERATIONS Chair: John Tunna - TTCI					ROOM 405
JRC2010-36029 Benefit-Cost Analysis of Infrastructure Improvement to Improve Train Safety <i>Xiang Liu and Chris Barkan - University of Illinois at Urbana-Champaign</i>	JRC2010-36074 The Development of a Railway Safety Assessment Program in South Korea <i>Hee-Min Noh, J.B. Wang, and Y.O Cho - Korea Railroad Research Institute</i>	JRC2010-36180 The Vulnerability Assessment of Railway Network <i>Wang Wei, Jun Liu, Haiying Li, and Jiang Xi - Beijing Jiaotong University</i>	JRC2010-36073 Commuter Rail Safety in the Presence of Freight Rail <i>Alan Hoback and Angel Dupree - University of Detroit Mercy</i>		
5-1 CAPACITY MODELING Chair: Gordon Mott - AAR					ROOM 406
JRC2010-36031 Determining the Causes of Train Delay <i>Mark Dingler, Chris Barkan, Amanda Koenig University of Illinois at Urbana-Champaign</i>	JRC2010-36158 Strategic Capacity Planning Process for Intercity Passenger Rail <i>Yung-Cheng Lai and Mei-Cheng Shih - National Taiwan University</i>	JRC2010-36277 Impact of Positive Train Control on Railway Capacity <i>Mark Dingler and Chris Barkan - University of Illinois at Urbana-Champaign Yung-Cheng Lai - National Taiwan University</i>	JRC2010-36280 Railway Capacity Challenge: Measuring and Managing in Britain <i>Melody Khadem-Sameni, John Preston, John Armstrong - University of Southampton</i>	JRC2010-36132 Optimization Model and Algorithm for Routing of Railway Passenger flow <i>Lu Tong, Lei Nie, Hui Ling Fu - Beijing Jiaotong University</i>	
2-1 CRASHWORTHINESS Chair: Kristine Severson - Volpe Center					ROOM 407
JRC2010-36020 Update on Alternative Occupant Volume Testing <i>Michael Carolan and Michelle Muhlanger - Volpe Center</i>	JRC2010-36247 Using a Physical Based Model to Predict Failure Behavior of Impacted Railroad Tank Car <i>Fazle Ahad, K. Enakoutsu, K.N. Solanki, and D.J. Bammann Mississippi State University</i>	JRC2010-36059 Glazed Bodyside Systems in Railway Vehicles <i>Chris Hogg - Independent Glass P. Matthews - Poised Joint Management</i>	JRC2010-36227 Tank Car Fittings Protection in Rollover Derailment Conditions <i>Robert Trent, Srinivas Chitti, Anand Prabhakaran and Vinaya Sharma - Sharma & Associates, Inc. Francisco González, III - Federal Railroad Administration</i>	JRC2010-36021 Estimated Weight Increase Resulting From Modifying European Trains To Meet F.R.A. Safety Rules <i>Brian Scales - Transportation Engineer</i>	

LUNCH - 314 ILLINI UNION

Tuesday, April 27 - Afternoon Sessions

Time Room	1:00	1:25	1:50	2:15	2:40
	4-1 SHARED CORRIDOR 2 Chair: Dallas Richards - ARCADIS				
ILLINI ROOM A	JRC2010-36042 Can the Nation's Railroads be Used to Accomodate Very High Speed Passenger Rail? <i>William Burgel - HDR Engineering</i>	JRC2010-36285 Applying the European HSR Experience to North America <i>Rod Case, Kevin Foy, David Hunt, and David Lehlback - Oliver Wyman</i>	JRC2010-36092 Planning Capacity Improvements for High Speed Rail Using the Rail Traffic Controller Rail Operations Simulation Model <i>Alan Tobias, David House, and Randy Wade - HNTB</i>		
	3-3 CALIFORNIA HIGH-SPEED RAIL CHAIR: CHAIR: MARK WALBRUN - CH2M HILL				
210	JRC2010-36078 California High Speed Train Project Alternatives Analysis Process <i>Steven Wolf - Parsons Brinckerhoff</i>	JRC2010-36105 When is High-speed Rail Fast Enough? <i>Kenneth Sislak - AECOM</i>	JRC2010-36138 The Altamont Corridor Rail Project Joint Use Corridor <i>Brent Ogden - AECOM Dan Leavitt - California High Speed Rail Authority</i>		
	1-4 BALLASTLESS TRACK DESIGN AND PERFORMANCE Chair: Donald Uzarski - UIUC		1-3 COMPOSITE AND ALTERNATIVE TIE DESIGNS Chair: Donald Uzarski - UIUC		
404	JRC2010-36046 Slab Track Testing for Shared Freight and High Speed Passenger Service <i>Dingqing Li - TTCL David Bilow - Hefter Industries Theodore Sussmann - Volpe Center</i>	JRC2010-36149 Slab Track System Zueblin <i>Viktor Enoekl - Ed. Zueblin AG</i>	JRC2010-36057 Composite Plastic Ties in MRS Brazil Heavy Haul <i>Celia Rodrigues - MRS LOGÍSTICA S/A</i>	JRC2010-36121 Development and Implementation of Recycled Thermoplastic RR Ties <i>PV Vijay, Ganga Rao Hota, Venugopal Chada, and Muhammad Qureshi - West Virginia University</i>	JRC2010-36291 Thermoplastic Composites as Degradation-Resistant Material Systems for Railroad Bridge Ties and Timber Bridge Structures <i>Richard Lampo - U.S. Army Engineer Research & Development Center</i>
	2-2 BEARING DESIGN AND TESTING Chair: Gerald Anderson - TTCI			2-7 WHEEL DESIGN AND ANALYSIS Chair: Gerald Anderson - TTCI	
405	JRC2010-36016 Rolling Bearings in High Speed Passenger Traffic <i>Matthias Kilian - Schaeffler Group</i>	JRC2010-36240 Ultrasonic Acoustic Health Monitoring of Ball Bearings Using Neural Network Pattern Classification of Power Spectral Density <i>William Kirchner, Steve Southward, and Mehdi Ahmadian - Virginia Polytechnic</i>	JRC2010-36269 Improved Rail Bearing Performance Through Ultrasonic Quantification of Bearing Steel Quality <i>Joseph Turner, Lucas W. Koester, and Chase Nielson - University of Nebraska-Lincoln Goutam Ghoshal - UIUC Brent M. Wilson - Amsted Allen J. Fuller - Brenco</i>	JRC2010-36024 Vertical Split Rim Failure Analysis in Railroad Wheels <i>Venkata Sura and Samkaran Mahadevan - Vanderbilt University</i>	JRC2010-36186 Design Method for High Speed Wheel Profiles by Considering Rolling Radii Difference Function <i>Gang Shen and Xia And Xiaobo Zhong - Tongi University</i>
	5-2 NETWORK MODELING Chair: Dave Clarke - University of Tennessee				
406	JRC2010-36093 A Constraint-Based Scheduling Model for Optimal Train Dispatching <i>Joaquin Rodriguez, Grégory Marlière, and Sonia Sobieraj - Université Lille-Nord de France</i>	JRC2010-36167 Dynamic Scheduling Model and Algorithm for Dispatching Trains in High-speed Railway Passenger Station <i>Yixiang Yue and Leishan Zhou - Beijing Jiaotong University</i>	JRC2010-36181 Research on Optimization of Urban Mass Transit Network Schedule Based on Coordination of Connecting Time between Different Lines <i>Xiaohong Fang, Zhou Leishan, and Xia Ming - Beijing Jiaotong University</i>	JRC2010-36211 Real Time Monitoring of Railway Traffic Using Fiber Bragg Grating Sensors <i>Pedro Corredera, A. Rodríguez-Barrios and S. Martín-Lopez - CSIC M. Filogramo - UAH M. Rodríguez-Plazac and A. Andrés-Aguacil - ADIF</i>	
	2-5 TRACTION Chair: David Tyrell - RITA / Volpe National Transportation Systems Center				
407	JRC2010-36010 Effective Friction Control for Optimization of High Speed Rail Operations <i>Donald Eadie and Ron Hui - Kelsan Technologies Corporation Kevin Oldnow - Portec Rail Inc. Yssushi Oka - Sumitomo Metal Peter Klauser Matt Dick - RailSciences</i>	JRC2010-36011 Top of Rail Friction Control as Means to Mitigate Damaging Lateral Loads Due to Overbalanced Operation of Heavy Axle Load freight Traffic in Shared HSR Corridors <i>Kevin Oldknow and Donald Eadie - Portec Rail, Inc</i>	JRC2010-36054 Implementation of Wheel-Rail Friction Management Strategy on MRS Railroad <i>Cristiao Jorge - MRS LOGÍSTICA S/A Walter Vidon Jr. and Felipe Vidon - Ch Vidon Rail Consultant Rob Caldwell - NRC-CSTT</i>	JRC2010-36206 Field Investigations on the Performance of Rolling Stock Components Against Low Adhesion Conditions <i>Oscar Arias-Cuevas and Zili Li - Delft University of Technology</i>	JRC2010-36229 Wheel-Rail Dynamic Model and Stochastic Analysis of the Friction in the Contact Patch <i>HyunWook Lee, Carvel Holton, and Corina Sandu - Virginia Tech</i>

3:05	3:25	3:50	4:15	4:40	5:05
3-5 FRA OFFICE RESEARCH AND DEVELOPMENT Chair: Mehdi Ahmadian - Virginia Tech					ILLINI ROOM A
JRC2010-36287 FRA Office of Research and Development Overview <i>Gary Carr - Federal Railroad Administration</i>	JRC2010-36288 FRA Approach for Train Occupant Protection <i>Eloy Martinez - Federal Railroad Administration</i>	JRC2010-36289 Adaptive Enforcement Algorithm Role in PTC Systems <i>Terry Tse - Federal Railroad Administration</i>	JRC2010-36290 Autonomous Inspection Technologies <i>Ali Tajaddin - Federal Railroad Administration</i>		
3-6 STATE PROGRAMS Chair: Michael Garcia - IDOT					ROOM 210
High Speed Rail in Illinois <i>George Weber - Illinois Department of Transportation</i>	JRC2010-36099 Estimating Economic Benefits of 220 MPH Chicago-St. Louis HSR Line <i>Emmanuel Horowitz - ESH Consult</i>	JRC2010-36065 Missouri's Experience in Submitting ARRA High Speed Rail Projects <i>Rodd Massman - Missouri DOT</i>	JRC2010-36205 High Speed and Commuter Rail Planning on the Florida East Coast Railway <i>Charles Lynch - Gannett Fleming</i>		
1-1 CONCRETE TIE FASTENERS Chair: Kevin Hicks - Union Pacific Railroad					ROOM 404
JRC2010-36274 Design of Concrete Crosstie Elastic Fastening Systems and its Effect on Rail Seat Deterioration <i>Mauricio Gutierrez, J. Riley Edwards, and Chris Barkan - University of Illinois at Urbana-Champaign</i>	JRC2010-36050 High Speed in China and Latest Developments on Fasteners for High Speed <i>Michael Steidl - Vossloh Fastening Systems America Corp.</i>	JRC2010-36284 Rail Fastenings for High Speed Rail Applications <i>Bob Coats and John Porrill - Pandrol USA</i>			
1-8 HIGH-SPEED RAIL SPECIAL TRACKWORK DESIGN AND PERFORMANCE Chair: Dingqing Li - TTCI				ROOM 405	
JRC2010-36114 Influencing Factors of Dynamic Performance of Jointless Turnout on Bridge in High-Speed Railway <i>Rong Chen, Ping Wang, and Xiaoping Chen - Southwest Jiaotong University</i>	JRC2010-36222 Improved Performance Track Components for Heavy Axle Loads and High Speed Rail <i>David Davis, Semih Kalay, and Joseph LoPresti - Transportation Technology Center, Inc.</i>	JRC2010-36126 Design Considerations in The Development of a North American High Speed Turnout <i>Brian Abbott, Gary Click, Ken Ouelette, Tom Lee, and Steve Mattson - VAE NORTRAK</i>	1-15 ELECTRIFICATION Chair: Dingqing Li - TTCI		
JRC2010-36114 Influencing Factors of Dynamic Performance of Jointless Turnout on Bridge in High-Speed Railway <i>Rong Chen, Ping Wang, and Xiaoping Chen - Southwest Jiaotong University</i>	JRC2010-36222 Improved Performance Track Components for Heavy Axle Loads and High Speed Rail <i>David Davis, Semih Kalay, and Joseph LoPresti - Transportation Technology Center, Inc.</i>	JRC2010-36126 Design Considerations in The Development of a North American High Speed Turnout <i>Brian Abbott, Gary Click, Ken Ouelette, Tom Lee, and Steve Mattson - VAE NORTRAK</i>	JRC2010-36151 Heavy Haul Railway Electrification - Experiences and Prospects <i>Dave Van der Meulen - Railway Corporate Strategy CC</i>		
5-7 FINANCE AND ECONOMICS Chair: Avery Grimes					ROOM 406
JRC2010-36083 Public Benefits Methodology - Can this Process be Standardized? <i>Kevin Keller, Fred Kramer, Mark Hemphill - HDR</i>	JRC2010-36159 A Multi-Period Investment Selection Model for Railway Capacity Expansion with Stochastic Demand <i>Yung-Cheng Lai and Mei-Cheng Shih - National Taiwan University</i>	JRC2010-36178 Application Research on Revenue Management in China High Speed Railway <i>Chunyan Li, Minshu Ma, and Xiaojun Li - Beijing Jiaotong University</i>	JRC2010-36036 Estimating Maintenance Costs for Mixed Higher Speed Passenger and Freight Rail Corridors <i>Allan Zarembski and Pradeep Patel- ZETATECH</i>		
2-3 FLUID DYNAMICS IN RAIL Chair: Michelle Muhlanger - RITA / Volpe National Transportation Systems Center					ROOM 407
JRC2010-36019 An Approach to Wind Blow-over Risk Reduction at BNSF Railway <i>Corey Pasta and Larry R. Milhon - BNSF William Shust - Objective Engineers Brian J. Dumont and Jenifer L. Miller - Airflow Sciences Corporation Walter Rosenberger - Norfolk Southern</i>	JRC2010-36112 Cross Wind Protection Systems for High Speed Railway Lines <i>Paula Alvarez Legazpi, Marta Vargas Muñoz, and Joaquin Botella Malagon SENER, Ingenieria y Sistemas, S.A. José Conrado Martinez Acevedo - Administrador de Infraestructuras Ferroviarias (ADIF)</i>	JRC2010-36207 Influence of Embankments With Parapets in the Cross-wind Turbulence Intensity at the Contact Wire of Railway Overheads <i>Sergio Avila-Sanchez, Oscar Lopez-Garcia and Jose Meseguer - Universidad Politécnica de Madrid</i>	JRC2010-36214 Experimental Study on the Ballast Pick-up Problem in High Speed Trains <i>Angel Sanz-Andrés, Fermín Navarro-Medina, Isabel Pérez Grande - Universidad Politécnica de Madrid</i>		

BREAK - EXHIBIT HALL - ILLINI ROOM B

POSTER PRESENTATION RECEPTION - ILLINI UNION BALLROOM (2ND FLOOR)

Wednesday, April 28 - Morning Sessions

Time Room	8:00	8:10	8:35	9:00	9:25	9:50
PLENARY SESSION - 2 Chair: Gerald Anderson - TTCI						
ILLINI ROOM A	Opening Remarks	JRC2010-36034 Integration of Safety Systems for High-Speed Rail Corridors <i>Grady Cothen - Federal Railroad Administration</i>	JRC2010-36220 Study of Technical System and System Integration Method of China High-Speed Railway <i>Shuguang Zhang - Chinese Ministry of Railways</i>	Shared Corridor Perspectives <i>John Gray - Association of American Railroads</i>	Applicability of PPP to High Speed Rail <i>Don Phillips - ARUP</i>	JRC2010-36267 Facing the Infrastruc- ture Challenges of Operating High Speed Rail in a Mixed Traffic Corridor <i>David Staplin, Conrad Ruppert, Michael Trosino, Joseph Smak, Steven Chrismer, and Drew Galloway - Amtrak</i>
404	No Sessions Scheduled in 404					
406	No Sessions Scheduled in 406					
407	No Sessions Scheduled in 407					

Wednesday, April 28 - Afternoon Sessions

Time	1:05	1:30	1:55	2:20	2:45	
Room	3-9 ASIAN HIGH-SPEED EXPERIENCE Chair: Ching-Lung Liao - China Engineering Consultants					ILL
ILLINI ROOM A	Innovation and Development of Chinese High-Speed Railway Track Engineering <i>Ping Wang - Southwest Jiaotong University</i>	History and Merits of Japanese High Speed Rail (Shinkansen) and Effect of Opening Shinkansen <i>Yuki Tanaka - Japan International Transport Institute (JITI)</i>	Planning and Executing a PPP-based HSR Project from Government View Points <i>Part 1: Luh-Maan Chang - National Taiwan University</i> <i>Part 2: Fu-Hsiangwu - Chung Hua University, Taiwan</i>	JRC2010-36052 The Experience of the Development of High-Speed Train Systems in Korea <i>Choonsoo Park, Kihwan Kim, and Sunghoon Choi - Korean Railroad Research Institute</i>		
	6-5 ENERGY AND ENVIRONMENTAL ISSUES IN RAIL SYSTEM DESIGN AND OPERATION Chair: Melissa Shurland - Federal Railroad Association					ROOM
404	JRC2010-36106 Application of FRA's Noise Guidelines to HSR <i>Carl Hanson - Harris Miller Miller & Hanson Inc.</i>	JRC2010-36123 Illinois Planning & Environmental Studies for FRA Applications for High Speed and Intercity Passenger Rail <i>Timothy Selover, Ronald Shimizu, and Philip Pasterak - Parsons Brinckerhoff</i> <i>George Weber - IDOT</i>	JRC2010-36226 Measuring (and Reducing) a Passenger Railroad's Carbon Footprint <i>Roy Deitchman and Celia Prentice - Amtrak</i>	JRC2010-36231 F NEPA Compliance for High-Speed Rail Projects: The Use of Tiering <i>Albert Ferlo and William Malley - Perkins Coie LLP</i>	JRC2010-36275 Integrating Environmental Sustainability Into the Design and Operations of High-Speed and Intercity Rail Facilities <i>Michael Laas, Gary Rozmus, Anastasia Harrison, and Chuck Mason - Gannett Fleming</i>	
	1-6 TRACK INSPECTION TECHNOLOGIES Chair: Boris Nejkovsky - Ensco			1-7 TRACK MAINTENANCE PLANNING Chair: Boris Nejkovsky - Ensco		ROOM
405	JRC2010-36203 Comprehensive Inspection Technologies <i>Weixing Hou - Chinese Ministry of Railways</i>	JRC2010-36208 The Canadian Pacific DGRMS - The First Use of Deployable GRMS in a Production Mode <i>Jeffrey Bloom - ENSCO</i> <i>Ron Gagne - Canadian Pacific Railway</i>	JRC2010-36213 Development of a Machine Vision System for Inspection of Railroad Track <i>Luis Fernando Molina - University of Illinois at Urbana-Champaign</i>	JRC2010-36200 A Heuristic Approach to Railroad Track Maintenance Scheduling Problem <i>Fan Peng, Seungmo Kang, Xiaopeng Li, Yanfeng Ouyang - University of Illinois at Urbana-Champaign</i> <i>Kamalesh Somani and Dharma Acharya - CSX Transportation</i>	JRC2010-36273 Managing and Measuring Compliance: A Work Management System for Track Inspections <i>Conrad Ruppert, James Cisneros, and Greg Heape - Amtrak</i> <i>William Boykin - SAIC</i>	
	1-11 RAIL STRESS MANAGEMENT Chair: David Davis - TTCI					ROOM
406	JRC2010-36037 Management of Broken Rail Risk for High Speed Passenger Rail <i>Allan Zarembski - ZETA-TECH</i>	JRC2010-36049 Track Buckling Analysis and Maintenance Strategy in Track Critical Points at MRS Heavy Haul Railroad <i>Cristiano Mendonça</i> <i>Célia Rodrigues - MRS LOGÍSTICA S/A</i> <i>Walter Vidon Jr - Ch Vidon</i>	JRC2010-36194 Ultrasonic Guided Waves in Continuously Welded Rails for Buckling Prediction <i>Ivan Bartoli, Robert Phillips, Stefano Coccia, Francesco Lanza di Scalea - University of California San Diego</i> <i>Mahmood Fateh and Gary Carr - Federal Railroad Administration</i>	JRC2010-36266 Monitoring Longitudinal Rail Stress Using Diffuse Ultrasonic Backscatter <i>Joseph Turner and Chris Kube - University of Nebraska-Lincoln</i> <i>Goutam Ghoshal - University of Illinois at Urbana-Champaign</i> <i>Mahmood Fateh - Federal Railroad Administration</i>	JRC2010-36022 Insulated Railway Joint Design Methodology Through Parametric Finite Element Based Modeling <i>Chase Holland, Thong Do, Robert West, and Mehdi Ahmadian - Virginia Tech</i>	
	2-4 VEHICLE TRACK INTERACTION Chair: Brian Marquis - RITA / Volpe National Transportation Systems Center					
407	JRC2010-36002 Dynamic Effects of Track Surface Condition on Vertical Wheel/Rail Forces and Energy Consumption <i>Allan Zarembski and Clifford Bonaventura - ZETA-TECH</i>	JRC2010-36003 Vibration Response Modes and Severity Rating for Freight Car Appliances <i>William Shust - Objective Engineers Inc.</i> <i>Darrell Iler - Canadian National Railway</i>	JRC2010-36124 Case Studies Determining the Effects of Track Stiffness on Vehicle Dynamics <i>Sheng Lu, Haoliang Duan, Curt Greisen, Richard Arnold, Shane Farritor - University of Nebraska-Lincoln</i> <i>Cory Hogan and Matthew Dick - Rail Sciences Inc.</i> <i>Mahmood Fateh and Gary Carr - Federal Railroad Administration</i>	JRC2010-36127 Dynamic Analysis of Unstable Vibration of KTX <i>Bubyoung Kang - Korea Railroad Research Institute</i>	JRC2010-36241 Reducing the Stress State of the Track through the Control of Wheel Impacts and Profiles <i>Michael Tomas and Joe Smak - Amtrak</i>	

	3:10	3:30	3:55	4:20	4:45	5:15
BREAK - EXHIBIT HALL - ILLINI ROOM B	3-7 ASIAN TECHNOLOGY AND SYSTEMS Chair: Ching-Lung Liao - China Engineering Consultants					ILLINI ROOM A
	Exportation of Japanese High Speed Rail Technology <i>Masashi Ishizuka - Kawasaki Heavy Industries, Ltd. (KHI)</i>	High Speed Train Development in China <i>Changhong Zheng - China South Locomotive and Rolling Stock Co. (CSR)</i>	Lessons Learned in Financing a PPP-based HSR Project <i>Bernice Fan - Fan International Consultants, Inc., Taiwan</i>	Supervising a PPP-based HSR Project from Government View Points <i>Bol-Yi Tsuei - CECI Engineering Consultants, Inc., Taiwan</i>		
	6-2 RISK ASSESSMENT OF HAZARDOUS GOODS TRANSPORT Chair: Mike Coltman - RITA / Volpe National Transportation Systems Center					ROOM 404
	JRC2010-36271 Environmental Risk Analysis of Railroad Transportation of Hazardous Materials <i>M. Rapik Saat, Chris Barkan, Charles J. Werth, David J. Schaeffer, Hongkyu Yoon, and Amanda Marruffo - University of Illinois at Urbana-Champaign</i>	JRC2010-36278 Statistical Comparison of Railroad Hazardous Materials Transportation Routes <i>Athaphon Kawprasert and Chris Barkan - University of Illinois at Urbana-Champaign</i>	JRC2010-36279 Options for Rail Route Infrastructure Improvement to Reduce Hazardous Materials Transportation Risk <i>Athaphon Kawprasert and Chris Barkan - University of Illinois at Urbana-Champaign</i>			
	1-5 TRACK ALIGNMENT PREDICTION MODELING Chair: Conrad Ruppert - Amtrak					ROOM 405
	JRC2010-36101 A Novel Algorithm for Predicting Track Irregularities of Unit Track Sections <i>Rengkui Liu, Peng Xu, and Quanxin Sun - Beijing Jiaotong University</i>	JRC2010-36110 Research on Track Alignment Irregularity Prediction Models <i>Futian Wang, Ran Guo, and Rengkui Liu - Beijing Jiaotong University</i>	JRC2010-36163 Forecasting of the Track State of BP Neural Network Based on Kalman Filtering <i>Chaolong Jia and Weixiang Xu - Beijing Jiaotong University</i> <i>Xumin Liu - Capital Normal University, Beijing</i>	JRC2010-36225 Sustainability in Track - A Precondition for High Speed Traffic <i>Peter Veit - Graz University of Technology</i> <i>Stefan Marschmig - LLC Rail Consult</i>		
	5-4 PPP AND RISK ANALYSIS Chair: Phil Pasterak - PB					ROOM 406
	JRC2010-36100 Planning of Taiwan High Speed Rail Project <i>James Chung Tai, Chun Cheng Lin, Heather Gaffney, and John Flint - T. Y. Lin International</i>	JRC2010-36137 Risk Management for Rail Transportation Projects <i>Paul Franklin - Arup</i>	JRC2010-36198 Using Public Private Partnerships to Deliver Successful Rail Projects <i>Steven Clark - Arup</i> <i>Nick Highton - Ove Arup and Partners, Ltd.</i>	JRC2010-36252 Overcoming Uncertainty and Controlling Risk in Planning a New Commuter Rail Service <i>Thomas Cornillie - Independent Scholar</i>		
	2-11 HIGH-SPEED VEHICLE TRACK INTERACTION Chair: Matthew Dick - Ensc					ROOM 407
	JRC2010-36028 Achieving Higher Operating Speeds Under Current and Proposed Federal Regulations <i>Eric Sherrock - ENSCO, Inc.</i> <i>Ali Tajaddini - Federal Railroad Administration</i> <i>Brian Marquis - RITA / Volpe National Transportation Systems Center</i>	JRC2010-36254 High Speed Rail Vehicle Qualification Requirements <i>Michael Trosino - Amtrak</i> <i>Kevin Kesler - Federal Railroad Administration</i>	JRC2010-36155 Optimizing Wheel/Rail Performance on High Speed, Mixed Traffic Corridors <i>Eric Magel - NRC-CSTT</i> <i>Brian Helfrich - Amtrak</i> <i>Ali Tajaddini - Federal Railroad Administration</i>	JRC2010-36188 Modeling Structural Flexibility in High Speed Rail Systems <i>Ahmed Shabana and Cheta Rathod - University of Illinois at Chicago</i>		

5:15PM - RECEPTION - ILLINI UNION SOUTH LOUNGE
6:30PM - BANQUET - ILLINI UNION BALLROOM

Thursday, April 29 - Morning Sessions

Room	Time	8:00	8:25	8:50	9:15	9:40
3-10 EUROPEAN HIGH-SPEED RAIL TECHNOLOGY Chair: Kevin Kesler - Federal Railroad Administration						
ILLINI ROOM A	Invited Session on European High-Speed Rail Technology <i>Frank Guzzo - Siemens</i> <i>Eric Garzon - Alstom</i> <i>Joshua Coran - Talgo</i> <i>Janis Vitins - Bombardier Transportation</i>					
6-6 GRADE CROSSING AND RIGHT-OF-WAY SAFETY Chair: David Thurston - Parsons						
210	JRC2010-36081 Applied High Resolution Traffic Controller Data Outcome Based Performance Measures with Gate-Down Confirmation Circuit <i>Thomas Brennan and Darcy M. Bullock - Purdue University</i> <i>James R. Sturdevant - Indiana Department of Transportation</i>	JRC2010-36120 Illinois High-Speed Rail Four-Quadrant Gate Reliability Assessment <i>Adrian Hellman and Tash Ngandung - Volpe Center</i>	JRC2010-36136 Augmentation of Level Crossing Safety Using Real-time Video and Numerical Warning System <i>Bih-Yuan Ku - National Taipei University of Technology</i>	JRC2010-36233 Train Horn Noise Impact Assessment Model <i>Jade Huang and Jeffery Warner - Texas Transportation Institute</i>		
5-3 DEMAND FORECASTING Chair: Yung-Cheng Lai - National Taiwan University						
404	JRC2010-36153 Who Rides These Things? <i>Jack Heiss -Parsons Brinckerhoff</i>	JRC2010-36223 Examining the Role of the Hiawatha Service in the Milwaukee-Chicago Corridor <i>Ben Sperry - Texas Transportation Institute</i> <i>Ethan Johnson - Wisconsin Department of Transportation</i>	JRC2010-36239 Evaluating the Impacts of Passenger Rail Service: Case Study and Lessons Learned <i>Curtis Morgan and Ben Sperry - Texas Transportation Institute</i>	JRC2010-36249 A Study of a Railway Traffic Demand Forecasting Model Based on Influencing Factor Analysis <i>Minshu Ma, Liu Jun, Chunyan Li, and Yanxiang Ma - Beijing Jiaotong University</i>	JRC2010-36270 Freight Demand Forecast for a Proposed Railway in Canada with New Approach to Freight Rail Assignment <i>Elham Boozarjomehri - Halcrow Consulting, Inc.</i> <i>Gordon Lovegrove. - University of British Columbia</i>	
1-13 TRACK SUBSTRUCTURE (PART 1) Chair: Ted Sussmann - RITA / Volpe National Transportation Systems Center						
405	JRC2010-36146 Utilization of Asphalt/Bituminous Layers and Coatings in Railway Trackbeds - A Compendium of International Applications <i>Jerry Rose- University of Kentucky</i> <i>Paulo Fonseca Teixeira - Technical University of Lisbon</i>	JRC2010-36087 Determination of Longitudinal and Transverse Railway Track Resistance <i>Olli Kerokoski - Tampere University of Technology</i>	JRC2010-36067 A Performance-Based Computer Program for the Structural Design and Analysis of Railway Track Structures - A Tutorial <i>Jerry Rose, Neeharika Ilaava, Nithin K. Agarwal, and Justin Brown - University of Kentucky</i>	JRC2010-36170 Dynamic Response for Heavy-haul Railway Subgrade Due to Moving Loads <i>Liang Dong, De-gou Cai, Yang-Sheng Ye, and Qian-li Zhang - China Academy of Railway Sciences</i>	JRC2010-36044 Analyses of Dynamic Behavior of Track Transition With Vehicle and Track Elements <i>Xiaoyan Lei and Bin Zhang - East China Jiaotong University</i> <i>Jerry Rose- University of Kentucky</i>	
1-12 TRACK DESIGN AND CONSTRUCTION Chair: Hank Lees - BNSF						
406	JRC2010-36050 Spiral Length Design <i>Nazmul Hasan - SNC-Lavalin Inc.</i>	JRC2010-36217 Design and Construction Technologies <i>Cailan Wu, Weixiao Cui, Li Huaijian, Yan Hongliang, Zhang Chengzhi - The Third Railway Survey & Design Institute Group Corporation</i>	JRC2010-36148 Critical Logistic Support Enables Fast Track Construction for High Speed Rail <i>James Blaze - ZETA-TECH</i> <i>Stephen Byers and Jay Gowan - HARSCO Rail</i>	JRC2010-36157 Innovative Solutions Speed Construction of Commuter Rail Corridor <i>John Hronek - HNTB Corporation</i>		
5-9 CASE STUDIES Chair: Pasi Lautala - Michigan Tech						
407	JRC2010-36072 Study on New Trends of Network and Transport Development of World Railways <i>Xiaoli Yang - China Academy of Railway Sciences</i>	JRC2010-36174 Creating and Saving American Jobs: A Labor Perspective on the Future of High Speed Rail <i>Floyd Mason - Brotherhood of Railroad Signalmen (BRS) AFL-CIO</i>	JRC2010-36204 Speed-up Technologies of China's Existing Railways <i>Jun Li and CaiChun Zhang - Chinese Ministry of Railways</i>	JRC2010-36228 High Speed Rail for America's Regional Transportation: A Study of Amtrak's Northeast Corridor <i>Xiaokun Wang, William Peterson, Paul Bortner, and Diana McCullough Bucknell University</i>		

10:05	10:25	10:50	11:15	11:40	12:05
2-8 ROLLING STOCK DESIGN Chair: Francisco Gonzalez - Federal Railroad Administration					ILLINI ROOM A
BREAK - EXHIBIT HALL - ILLINI ROOM B	<p>JRC2010-36023 Evaluation of Modern Passenger Side Door Types and Integration with Car Design for Heavy and Light Rail Applications in North America Brian Donohue - Parsons Brinckerhoff</p>	<p>JRC2010-36244 Freight Truck for Higher Speed Operations Anand Vithani, Graydon F. Booth, Anand Prabhakaran, Som P. Singh, David C. Brabb, and Srinivas Chitti - Sharma & Associates, Inc. S. K. Punwani and Monique F. Stewart - FRA</p>	<p>JRC2010-36256 Analysis of Fatigue Reliability in Aluminum Car Bodies for High Speed Rail Takeru Igusa and Arghavan Louhghalam - Johns Hopkins University Choonsoo Park and Sunghoon Choi - Korea Railroad Research Institute</p>	<p>JRC2010-36243 Motion-based Energy Harvesting Devices for Railroad Applications Clement Nagode, Mehdi Ahmadian, and Saied Taheri - Virginia Tech</p>	
6-3 POSITIVE TRAIN CONTROL (PTC) - TECHNOLOGY AND REGULATION Chair: Robert Dorer - Volpe					ROOM 404
	<p>JRC2010-36038 Positive Train Control and the Rail Safety Improvement Act of 2008 Mark Hartong - Federal Railroad Administration Rajni Goel - Howard University Duminda Wijesekera - George Mason University</p>	<p>JRC2010-36056 Beyond Predictive Braking David Thurston - Parsons</p>	<p>JRC2010-36201 Rail-CR: Cognitive Radio for Enhanced Railway Communications Ashwin Amanna, Manik Gadhiok, Matthew J. Price, and Jeffrey H. Reed - Virginia Tech W. Pam Sirivongpairat and T. Kee Himsoon - Meteor Communications Corp.</p>	<p>JRC2010-36260 Avoiding Increased Trip Times and Other Operational Impacts When Implementing Positive Train Control Davis Dure and Stephen A. McEvoy - SYSTRA Consulting, Inc</p>	
					12:05PM - ADJOURN - LUNCH ON YOUR OWN
1-13 TRACK SUBSTRUCTURE (PART 2) Chair: Jerry Rose - University of Kentucky					
	<p>JRC2010-36215 Polyurethane Coating of Railroad Ballast Aggregate for Improved Performance Erol Tutumluer and Marcus Dersch - University of Illinois at Urbana-Champaign Calvin Peeler and David Bower - BASF Corporation</p>	<p>JRC2010-36232 Track Substructure Design Methodology and Data Theodore Sussmann - Volpe Center James Hyslip</p>	<p>JRC2010-36283 Modeling of the Effect of Embankment Dimensions on the Mechanical Behavior of Railway Track Antti Kalliainen, Pauli Kolisoja, and Antti Nurmikolu - Tampere University of Technology</p>		12:15PM - TECHNICAL TOUR - 314AB ILLINI UNION
1-10 RAIL Chair: Mike Gilliam - Union Pacific Railroad					
	<p>JRC2010-36039 Rolling Contact Fatigue in Passenger and Freight Railroads John Tunna - TTCI</p>	<p>JRC2010-36082 Development of High Performance Steels for Rail Applications Raymundo Ordonez, C. Isaac Garcia, and Anthony J. DeArdo - University of Pittsburgh Semih Kalay - Transportation Technology Center, Inc.</p>	<p>JRC2010-36184 Squat Treatment by Way of Minimum Action Based on Early Detection to Reduce Life Cycle Costs Zili Li, Marija Molodova, and Xin Zhao - Delft University of Technology Rolf Dollevoet - ProRail</p>	<p>JRC2010-36189 Rail Wear Simulation and Validation Xinggao Shu, Nicholas Wilson, and Curtis Urban Transportation Technology Center, Inc. Mark Dembosky - Network Rail</p>	ROOM 407
5-6 STATION DESIGN AND PASSENGER SERVICES Chair: Eric Peterson - American High Speed Rail Alliance					
	<p>JRC2010-36102 Organization of External Traffic Based on Streamline Analysis for Beijing-Shanghai High Speed Railway Stations Xiang Rui, Juanjuan Ren, and Zihan Tang - Southwest Jiaotong University</p>	<p>JRC2010-36128 Study on Optimization of Train Line Planning for High Speed Rail Corridor Based on Analyzing the Importance of Nodes Yong-Tao Niu, Bao-Ming Han, Min Liu, Qing-Lan Zhu - Beijing JiaoTong University</p>	<p>JRC2010-36135 Taiwan High Speed Rail Stations: A Seamless and Integral Approach Shih-Chieh Wang - Sinotech Engineering Consultants, Ltd.</p>	<p>JRC2010-36165 Key Issues on Rail Line Planning for Beijing-Shanghai High Speed Railway Lei Nie, DongBin Fei, HuiLing Fu, Tong Lu - Beijing Jiaotong University Shi Dun Zhou - Chinese Ministry of Railways</p>	

Poster Presentations

**There will be a special reception for poster presenters in the Illini Union Ballroom on Tuesday, April 27th from 5:15 to 7:00pm.
(poster presenters - please set up at 4:30pm)**

TRACK 1 RAILROAD INFRASTRUCTURE ENGINEERING - POSTER PRESENTATIONS

1. JRC2010-36085 Key Construction Technology of Track Slab in Turnout Zones on Passenger Dedicated Lines

Yong Zeng, Xueyi Liu, and Rongshan Yang - Southwest Jiaotong University

2. JRC2010-36086 Microstructural Analysis of Thermite Welds

*Konstantin Redkin - University of Pittsburgh & TTCI
Isaac C. Garcia and Anthony J. DeArdo - University of Pittsburgh
Daniel Gutscher and Semih Kalay - Transportation Technology Corporation, Inc.*

3. JRC2010-36104 Research on Compressive Stress and Compression of Hard Foam Board for Longitudinal Coupled Slab Track on Bridges

Juanjuan Ren, Rui Xiang, and Yong Zeng - Southwest Jiaotong University

4. JRC2010-36115 Dynamic Assessment of Ballastless Track Stiffness and Settlement in High-speed Railway

Ping Wang, Rong Chen, Xiaoping Chen - Southwest Jiaotong University

5. JRC2010-36161 Study on Calibration and Noise-Reduction of Track Inspection Car in Detecting Data

*Chaolong Jia and Weixiang Xu - Beijing Jiaotong University
Liu Xumin - Capital Normal University, Beijing*

6. JRC2010-36179 Long-term Behavior and Performance of Ballastless Track Superstructure on China's Suining-Chongqing Railway Line

Hong-song Lin, Hua Yan, Xueyi Liu, Juanjuan Ren - China Railway Eryuan Engineering Group Co. Ltd

7. JRC2010-36255 Train-Bridge Dynamic Interaction: Development of Simplified Analysis Techniques

*Takeru Igusa and Nicholas P. Jones - Johns Hopkins University
Choonsoo Park, Sunghoon Choi, and Kihwan Kim - Korea Railroad Research Institute*

8. JRC2010-36272 Wireless Networking of Rail Sensors on Continuously Welded Rail

James Bilodeau, Heath Pier, Kevin Clark, David Gregg - DataTraks, Inc

9. JRC2010-36080 Local Stress Analysis and Model Test of Arch Foot for A Steel Box Arch Bridge on High-speed Railway

*Xuhui He and Anhua Zhao - Central South University
Andrew Scanlon - Penn State University
Ianping Peng - China Railway Engineering Consultants Group*

TRACK 2 RAIL EQUIPMENT ENGINEERING - POSTER PRESENTATIONS

10. JRC2010-36032 Improved Design Of End Hose Support Strap For Freight Cars

Xiao Zhang and Lin Hua - Strato, Inc.

11. JRC2010-36048 Behavior of Vibrations in Rolling Elements with Temperature Variation, in order to Determine Life Span in Bearings. Phase II: Roller Bearings with External Heat Source.

Edgar Alfredo Díaz Pérez, Iván Darío Gómez Lozano, Álvaro Alejandro García Alfonso, and Diego Fernando Pinzón Morales - Universidad Libre de Colombia

12. JRC2010-36070 A New Type of Heavy-Duty Freight Car

Mingzhu Li - CNR Harbin Railway Transportation Equipment Co.,Ltd

13. JRC2010-36094 Perspective Schemes of Passenger Brake Mechanical Systems and Dynamic Analysis Tasks

Guri Sharashenidze, Nikoloz Mgebrishvili, Pavle Kurtanidze, and Liana Kuparashvili - Georgian Technical University

14. JRC2010-36140 Study on the Effect of Traction Tonnage on Train Longitudinal Impact

Lifen Ding - Beijing Jiaotong University

15. JRC2010-36152 Application of Technical FMECA (Failure Mode and Effect Analysis) in Roller Bearing for Freight Car

Julio Jesus - MRS LOGÍSTICA S/A

16. JRC2010-36156 Technical Platform Construction of High-speed Train

Jun Wang and Ming Gong - CSR Sifang Locomotive and Rolling Stock Co., Ltd.

17. JRC2010-36185 Analysis and Design Control System Intelligent in Order to Increase the Speed and Safety Network Rail Microeconomic and Options in the Tension

*Karim Ghanbari and Keyvan Sadeghi - The Young Researchers Club Kermanshah & The Young Researchers Club Kurdistan
Amjad Zarei - Islamic Azad University of Kurdistan*

18. JRC2010-36209 Control of Indoor CO₂ Concentrations in Passenger Cabin by CO₂ Adsorbent

*Youngmin Cho, Soon-Bark Kwon, and Duck-Shin Park
Korea Railroad Research Institute*

19. JRC2010-36218 Prediction of the thermal stability of wheel in frequent brake for urban rail vehicle

*Zhizhuang Yu, Wang Yong, Zuo Jianyong, Han Bin, Gu Leilei -
Tongji University*

**TRACK 3 HSR EXPERIENCE &
DEVELOPMENT - POSTER PRESENTATIONS**

20. JRC2010-36063 Maglev High Speed Rail Along the Northeast Corridor

Jack Kinstlinger - KCI Technologies

21. JRC2010-36197 Prediction and Demonstration of Reliability for a Prototype High-Speed Train System

*Sunghoon Choi, Taehyung Lee, and Choonsoo Park
Korea Railroad Research Institute*

22. JRC2010-36236 Who Ride The High Speed Rail in the United States —the Acela Express Case Study

Zhenhua Chen - George Mason University

23. JRC2010-36091 High-speed Passenger Trains on Freight Tracks: Issues on Capacity Analysis, Train Timetabling and Real-time Dispatching

*Xuesong Zhou - University of Utah
Lingyun Meng and Yun Bao - Beijing JiaoTong University*

24. JRC2010-36125 Track Maintenance Scheduling and its Interactions with Operations: Dedicated and Mixed High-speed Rail (HSR) Scenarios

*Hamed Pouryousef - MIT-Portugal program (Technical University of Lisbon)
Joseph Sussman - Massachusetts Institute of Technology (MIT)
Paulo Teixeira - Technical University of Lisbon (IST)*

25. JRC2010-36268 Maintaining Freight Rail Access on the San Francisco Peninsula Four Track HSR-Regional Rail Corridor

*Lewis Ames - San Francisco Municipal Transportation Agency
Jim Maloney - Port of San Francisco*

**TRACK 5 PLANNING, MANAGEMENT &
OPERATION - POSTER PRESENTATIONS**

26. JRC2010-36133 Problems of Planning and Management on the Georgian Railway

Goderdzi Tkeshelashvili - Georgian Technical University

27. JRC2010-36134 Improvement of Internal Management of Georgian Railway

Tamar Kamkhadze - Georgian Technical University

28. JRC2010-36139 Analysis and Evaluation on Passenger Flow Organization Scheme of Beijing South Station

Haiying Li, Miao-Jianrui, Li-Dewei, and Jiang-Xi - Beijing Jiaotong University

29. JRC2010-36141 Taiwan High Speed Rail Depots - Maintainability and Sustainability

*Daniel Chen - Parsons Brinckerhoff International, Inc. Taiwan Branch
S. H. Lin - Sinotech Engineering Consultants, Ltd.*

30. JRC2010-36144 Research on the Capacity Calculation and Assessment System Based on UIC for Chinese High Speed Railway

Jiamin Zhang, Bao-Ming Han, and Lei Nie - Beijing Jiaotong University

31. JRC2010-36166 A Simulation Analysis of Train Rescheduling Strategies on Railway Operation of High Speed Railway

Zhenhuan He and Lei Nie - Beijing Jiaotong University

Poster Presentations

32. JRC2010-36168 Study on the Algorithmic for Train Operation Adjustment Based on Ordinal Optimization

Yongjun Chen and Leishan Zhou - Beijing Jiaotong University

33. JRC2010-36169 A Cooperative Model and Algorithm for High-Speed Railway Network Train Operation Adjustment

*Ming Xia and Zhou Yanfang - Beijing Jiaotong University
Zhou Leishan - Fang Xiaohong*

34. JRC2010-36173 The Use of Abandoned Railroad Right-of Ways for Transportation Corridors of the Future

David Mangold - University of Akron

35. JRC2010-36175 Study on Macroscopical Allocation Method of Train-set on Large Scale Railway Network

Hua Li, Bao-Ming Han, and De-Wei Li - Beijing Jiaotong University

36. JRC2010-36202 Demonstration of the RATSNA CCS Heavy Train Velocity Control System

Mark Hayman and Christopher Bosomworth - Insyte Solutions

37. JRC2010-36230 Proposed High-Speed Rail Plan in the United States: Economic Perspectives

*Junwook Chi - Nick J. Rahall II Appalachian Transportation Institute
Rebecca Dingus and Samuel Waugaman - Marshall University*

38. JRC2010-36246 Modeling Periodic Train Service of China Special Passenger Lines

Min Liu and Bao-Ming Han - Beijing Jiaotong University

39. JRC2010-36248 An Approach for Short-term Forecast of Railway Passenger Flow Based on Daily Booking Data During the Pre-sale Period

Minshu Ma, Jun Liu, Chunyan Li, and Xue Han - Beijing Jiaotong University

40. JRC2010-36253 An Optimization Method for Locomotive Utilization Based on High Speed Railroad Complex Network

Qin Sheng, Zhou Lei-shan, and Yue Yi-Xiang - Beijing Jiaotong University

41. JRC2010-36281 Revising UIC 406 Method for Capacity Analysis: Revenue Generating Capacity

*Melody Khadem-Sameni and John Preston - University of Southampton
Alex Landrex - Technical University of Denmark*

TRACK 6 SAFETY, SECURITY & ENVIRONMENT - POSTER PRESENTATIONS

42. JRC2010-36055 Responding to Environmental Discoveries

Michael Kinder - Marshall Miller & Associates, Inc.

43. JRC2010-36150 NC DOT Phase I through Phase IV Assessment

Patrick Bien-Aime - Volpe Center

44. JRC2010-36182 Locomotive Whole Body Vibration Exposure: A Critical Review of the Epidemiologic and Technical Literature

Donald C. Sinclair II - Sinclair PLLC Occupational & Environmental Legal Consulting

45. JRC2010-36190 Implications of Supreme Court Decision on Railroad Liability for Proportionate Share CERCLA Cleanup

Richard Kuntz - Bollinger, Ruberry & Garvey

46. JRC2010-36212 First for Repairs, Then for Damages: Environmental Liability and Environmental Stewardship in Railroad Stock Prices

Patrick McLaughlin - Federal Railroad Administration

47. JRC2010-36248 An Approach for Short-term Forecast of Railway Passenger Flow Based on Daily Booking Data During the Pre-sale Period

Minshu Ma, Jun Liu, Chunyan Li, and Xue Han - Beijing Jiaotong University

48. JRC2010-36253 An Optimization Method for Locomotive Utilization Based on High Speed Railroad Complex Network

Qin Sheng, Zhou Lei-shan, and Yue Yi-Xiang - Beijing Jiaotong University

49. JRC2010-36281 Revising UIC 406 Method for Capacity Analysis: Revenue Generating Capacity

*Melody Khadem-Sameni and John Preston - University of Southampton
Alex Landrex - Technical University of Denmark*



Professional Development Hours Completion Certificate

_____, received the below checked Professional Development Hours (PDH) for a maximum of 19 for attending the:

2010 Joint Rail Conference

at the University of Illinois at Urbana-Champaign on April 27 through 29, 2010, in Urbana, IL.

Attendee – please check each box for the sessions you attended and write the sum of your total PDH gained in the box below.

- 1.5 PDH: April 27, Tuesday Plenary Session – 8:00- 9:25am
- 2 PDH: April 27, Tuesday AM Session- 9:40-11:45am
 - 1-2 Concrete Tie Design and Performance
 - 2-1 Crashworthiness
 - 5-8 Rail Education
 - 4-1 Shared Corridor
 - 5-1 Capacity Modeling
 - 6-1 System Safety Assurance in Rail Operations
- 3 PDH: April 27, Tuesday PM Session 1- 1:00-3:05pm
 - 2-2 Bearing Design and Testing, 2-7 Wheel Design and Analysis
 - 2-5 Traction
 - 1-4 Ballastless Track Design and Performance, 1-3 Composite and Alternative Tie Designs
 - 4-2 Shared Corridor 2
 - 5-2 Network Modeling
 - 3-3 California
- 1.5 PDH: April 27, Tuesday PM Session 2- 3:25- 5:10pm
 - 1-8 High-Speed Rail Special Trackwork Design and Performance
 - 2-3 Fluid Dynamics in Rail
 - 5-7 Finance and Economics
 - 1-1 Concrete Tie Fasteners
 - 3-6 State Programs
 - 3-5 FRA Office Research and Development

- 2 PDH: April 28, Wednesday Plenary Session 8:00-10:15am
- 1.5 PDH: April 28, Wednesday AM Session 10:35- 11:50am
 - 1-9 High-Speed Rail Structures
 - 6-4 Human Factors in Rail Engineering and Operations
 - 2-9 Inspection Technology
 - 5-5 Resource Planning
- 2.5 PDH: April 28, Wednesday PM Session 1 1:05- 3:30
 - 3-9 Asian Experience
 - 1-6 Track Inspection Technologies, 1-7 Track Maintenance Planning
 - 1-11 Rail Stress Management
 - 6-5 Energy and Environmental Issues in Rail System Design and Operation
 - 2-4 Vehicle Track Interaction
- 1.5 PDH: April 28, Wednesday PM Session 2 3:30- 5:10
 - 3-7 Asian Technology and Systems
 - 1-5 Track Alignment Prediction Modeling
 - 2-11 High-Speed Vehicle Track Interaction
 - 5-4 PPP and Risk Analysis
 - 6-2 Risk Assessment of Hazardous Goods Transport
- 2 PDH: April 29, Thursday AM Session 1 8:00- 10:05
 - 1-12 Track Design Construction
 - 3-11 European High-Speed Rail Technology
 - 5-3 Demand Forecasting
 - 6-6 Grade Crossing and Right-of-Way Safety
 - 1-13 Track Substructure
 - 5-9 Case Studies
- 1.5 PDH: April 29, Thursday AM Session 2 10:25- 12:05
 - 1-10 Rail
 - 1-8 Rolling Stock Design
 - 6-3 Positive Train Control (PTC)- Technology and Regulation
 - 1-13 Track Substructure (continued from AM Session 1)
 - 5-6 Station Design and Passenger Services

Kim Hagemann

Kimberley Hagemann
 2010 Joint Rail Conference
 University of Illinois at Urbana-Champaign, IL
 hagemann@illinois.edu
 217-244-0841

Total Number of PDH Received

--

Exhibitors

AECOM
ARCADIS
BLOOM COMPANIES
HARSCO RAIL
INSTITUTE FOR TRANSPORT POLICY, JAPAN
INVENSYS RAIL
KAWASAKI RAIL CAR, INC.
MACTON
MICRO-BLAZE

MTS SYSTEMS CORPORATION
PANDROL USA
RAIL SCIENCES
SCHNABEL FOUNDATION COMPANY
SCHWAB SCHWINGUNGSTECHNIK AG
SCHWIHAG AG
SIEMENS
SISCOG - SISTEMAS COGNITIVOS, SA
TRANSPORTATION TECHNOLOGY CENTER, INC.
TRANSYSTEMS

